



# Updates From the Field TECHNICAL NOTES

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## SETTING UP A COMMUNITY-BASED DISEASE SURVEILLANCE SYSTEM

### Background

Bago City, one of 10 cities in Negros Occidental, a province in the Western Visayas Region of the Philippines, has a population of 144,000 spread throughout 24 *barangays* (villages). The city's health services operate through one government hospital, one main health center, and 33 barangay health stations. These health services have struggled to contain outbreaks of certain communicable diseases; in 2000, for example, the 10 leading causes of morbidity in the city included water- and food-borne diseases such as hepatitis and diarrhea.

To help the City Health Office better respond to the community's health needs, the City Health Officer began setting up a community-based disease surveillance system (CDSS) in 1999. On several occasions, disease outbreaks had strained the capacity of the City Health Office and seriously threatened the health of Bago City's residents. A disease surveillance system would enable local health managers to respond to outbreaks immediately, reducing the burden of communicable diseases on the population. The same system would also help local health workers assess the adequacy of preventive measures, such as immunization and micro-nutrient supplementation. In addition, the surveillance system would help inform local politicians about the

region's health problems, encouraging them to support health programs and services.

### Setting up Bago City's CDSS

The City Health Officer of Bago City asked the Program Management Technical Advisors Team (PMTAT) of Management Sciences for Health to provide technical assistance in setting up the city's CDSS. PMTAT helps the Philippines Department of Health carry out its USAID-funded Matching Grant Program, an initiative to expand and

improve the quality of health services at the local level, particularly in areas with large disadvantaged populations. Bago City is one of the grantees of the Matching Grant Program.

Bago City's Health Officer met with PMTAT to discuss the CDSS concept and training design. The Health Officer and PMTAT then visited the Epidemiology and Disease Surveillance Unit of Parañaque City, the only local government unit in the country with a computerized CDSS, to observe and learn about its system. In October 2000, the City Health Officer



**MATCHING GRANT PROGRAM**  
Department of Health

met with all the City Health Office physicians to discuss the objectives of the CDSS, the diseases that should be monitored, and the surveillance personnel needed and their duties and responsibilities. They selected the diseases to be monitored based on the outbreak potential, availability of control and prevention measures, and endemicity of each disease. Finally, from November 28 to December 1, 2000, with technical assistance from PMTAT, the City Health Office held a four-day training course on the CDSS for its health staff of 8 doctors, 24 nurses, and 49 midwives.

During the first day of the training course, staff learned about the importance of a CDSS in Bago City, the target diseases, and the flow of reports to be submitted. The next two days provided a crash course on basic epidemiology and surveillance, accompanied by extensive discussion about appropriate reporting units, reporting forms and worksheets, submission of information about cases, data analysis, and report generation. The group agreed to adopt the worksheets developed by Parañaque City. During the final day, the surveillance team, composed of two nurses and one doctor, received training in the use of Epi Info for database management and analysis.

The training course, while useful in upgrading the health staff's basic knowledge of and skills in epidemiology and surveillance, proved inadequate to enable Bago City to set up its disease surveillance system without further assistance from PMTAT. Based on Bago City's experience, therefore, PMTAT, with the National Epidemiology Center of the Philippines Department of Health and the Infectious Disease Surveillance and Control Project, developed a training course to prepare Local Government Units to set up a basic disease surveillance system and conduct disease outbreak investigations

### Box 1. Planning Process for Community-Based Disease Surveillance System

This five-day course is not a typical training workshop with lectures and presentations. It uses the "learning by doing" approach, in which the group completes a set of tasks, using predesigned formats, criteria, examples, and reference materials, in order to generate certain prescribed products within each session. While the enhancement of individual knowledge of and skills in epidemiology and surveillance is not its primary purpose, such learning does take place as a byproduct of the process. Following are the relevant sessions:

#### Day 1

Session 1: Workshop Objectives and Design: 1 hour

*To enable participants to understand the workshop objectives, method of work, and the rationale of the team approach to designing, planning, and implementing a community-based disease surveillance system.*

Session 2: Understanding Surveillance: 2 hours

*To enable participants to formulate surveillance objectives and identify the tasks to achieve these objectives.*

Session 3: Defining Diseases for Surveillance: 4 hours

*To enable participants to develop a list of diseases for Local Government Unit (LGU) surveillance, including their case definitions, basis for diagnosis, and criteria for selection.*

#### Day 2

Session 4: Flow of the Surveillance System: 4 hours

*To enable participants to design the LGU's organizational structure for disease surveillance, identifying all the units involved, along with their respective tasks.*

Session 5: Organizing and Summarizing Surveillance Data: 4 hours

*To refine participants' skills in organizing surveillance data and in applying basic statistics to actual surveillance data.*

#### Day 3

Session 6: Managing an Outbreak I (Outbreak Investigation and Data Analysis): 8 hours

*To enable participants to undertake a simulated outbreak investigation in a systematic way, analyze and present data from the investigation, and develop a flowchart showing the fundamental steps in conducting outbreak investigation.*

#### Day 4

Session 7: Managing an Outbreak II (Preparation of the Written Report on the Outbreak Investigation): 4 hours

*To enable participants to understand the basic concepts in preparing written reports and identify the users of such reports.*

Session 8: Managing an Outbreak III (Oral Presentation of the Outbreak Investigation Report): 4 hours

*To enable participants to understand the basic concepts in preparing and giving oral reports and prepare relevant presentation materials for actual oral presentation.*

#### Day 5

Session 9: LGU Surveillance System Implementation Plan: 4 hours

*To enable participants to develop a functional description of the LGU Surveillance Unit and formulate a work and financial plan for the design and implementation of the LGU Surveillance System.*

Session 10: Presentation of the LGU Work Plan and Financial Plan and the LGU Commitment: 4 hours

*To enable participants to present their work plans and financial plans for the design and implementation of the LGU Surveillance System and confirm their commitment to support disease surveillance initiatives.*

\* Evening sessions (two hours per night for four nights) were devoted to learning Epi Info.

(see Box 1). This course, which was pilot-tested in four Matching Grant sites, is now available to all cities and municipalities participating in the program.

## The Bago City CDSS

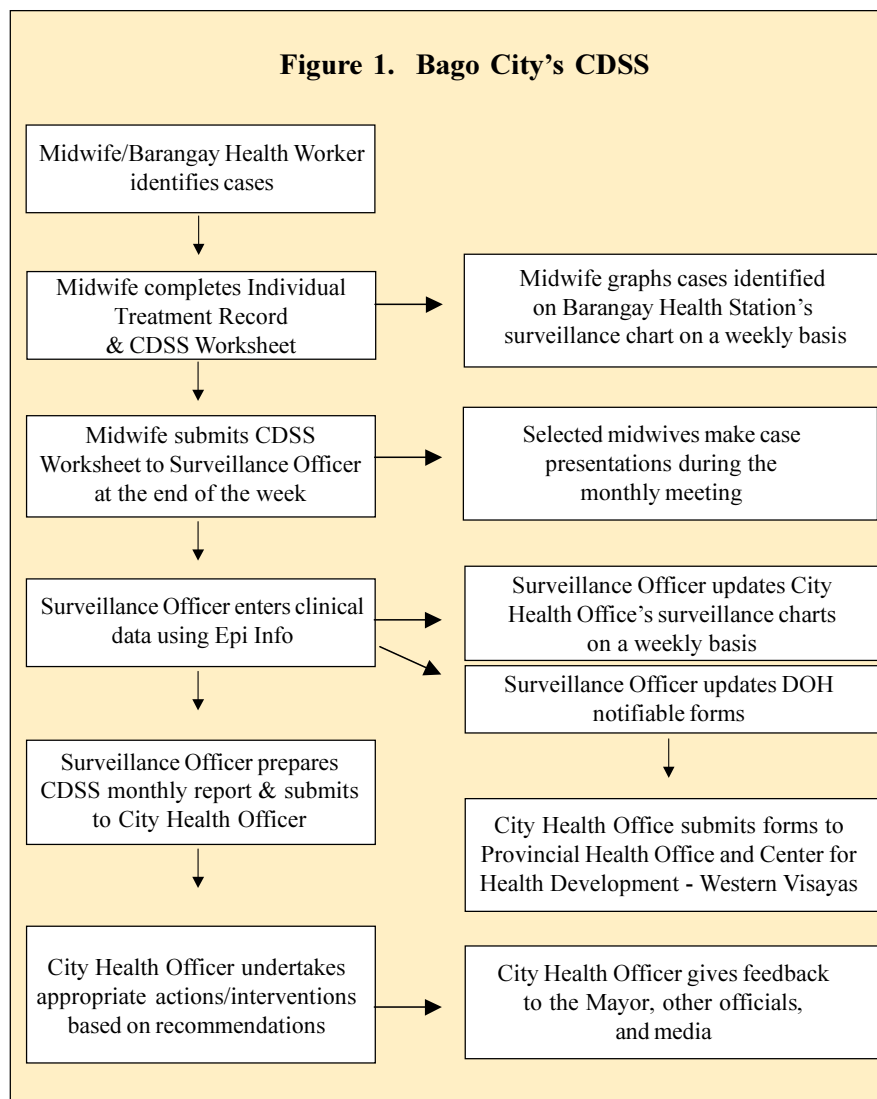
Bago City's CDSS is designed to monitor the occurrence of 13 diseases, including acute flaccid paralysis, animal bite, dengue hemorrhagic fever, diarrheal disease, diphtheria, measles, meningococcal disease, neonatal tetanus, non-neonatal tetanus, pertussis, cholera (suspected/confirmed), typhoid fever (suspected/confirmed), and viral hepatitis (A and B). The surveillance system provides accurate, reliable, relevant and timely information on these diseases, enabling health workers and decision-makers to develop and implement control and prevention interventions.

More specifically, Bago City's CDSS is intended to:

1. provide early warning about disease outbreaks;
2. formulate and carry out appropriate and timely interventions;
3. determine trends of diseases under surveillance;
4. describe the demographic characteristics of identified cases;
5. assess the effectiveness of health interventions using the community-based monitoring and information system Bago City has implemented as a complementary data gathering system;
6. generate information that can be used to lobby for more support for health.

The system works in the manner shown in Figure 1:

**Figure 1. Bago City's CDSS**



### **1** *The midwife or the barangay health worker identifies the cases.*

Cases are identified either through consultation with patients at the health center or through information provided by the barangay health worker. At the outset of the CDSS, the City Health Office directed all midwives to post a health advisory in strategic places at each health center. These advisories inform the public about what to do, where to go, and to whom to report if anyone observes the signs or symptoms of a disease listed in the advisory. The same advisory is also posted in schools, particularly in areas

where a high incidence of diseases has been noted.

### **2** *The midwife completes the individual treatment record (ITR) and CDSS worksheet.*

An ITR is prepared for each patient seen at the health center. The names of patients diagnosed with any of the CDSS diseases are entered on the CDSS worksheet. The respective ITRs are attached to the worksheet. For standardization, midwives refer to the case definitions provided by the

Bago City Health Office  
Community-Based Disease Surveillance System Worksheet (CDSS Worksheet)

Health Center: \_\_\_\_\_  
Medical Officer/RHM: \_\_\_\_\_

Disease for surveillance: AFP, Measles, Animal Bite, Cholera (Suspect and Confirmed), Dengue Hemorrhagic Fever, Diarrheal Diseases, Diphtheria, Meningococcal Disease, Neonatal Tetanus, Non-neonatal Tetanus, Pertussis, Typhoid Fever (Suspect and Confirmed) and Viral Hepatitis (Hepa A & B)

Date	Complete Name (Surname First)	Age	Sex	Complete Address	Diagnosis	Biting Animal	Vaccination Status (No. of Doses) For those with EPI Disease				Fatality (Y/N)	Lab. Results for Con- firmed Cases
							BCG	DPT	OPV	M		

City Health Office in deciding who is included on the worksheet. The midwife, meanwhile, graphs the cases identified on the barangay health station's surveillance chart on a weekly basis.

### 3 *The midwife submits the CDSS worksheet to the surveillance officer at the end of the week.*

The CDSS team visits the health centers during the first two days of the week to collect the worksheets. In some instances, the midwives themselves bring the worksheets to the City Health Office. The surveillance officers confirm the entries in the worksheets by reviewing the ITRs. If the findings in the ITR do not support the entries in the worksheet, corresponding corrections are made, and the midwife initials the alterations. In catchment areas where outbreaks of a particular disease were reported, the midwives make case presentations during the surveillance team's monthly meetings.

### 4 *The surveillance officers enter the clinical data gathered, using Epi Info.*

The surveillance team maintains a database using Epi Info that it updates on a weekly basis. The surveillance

officers likewise use these weekly data in updating the City Health Office's surveillance chart. The information also serves as a basis for updating the Department of Health's form for tracking notifiable diseases, which is submitted to the Provincial Health Office and the Center for Health Development in the region.

### 5 *The surveillance officers prepare reports for dissemination.*

The City Health Officer is the main recipient of the CDSS monthly reports. Other recipients include the mayor, city councilors, the concerned barangay captains, and, in some cases, the principal of the school where a number of students were reported to be afflicted with the subject disease. All reports follow the same format (introduction, background, methodol-

ogy, discussion, action/s taken, and recommendations). A summary report is also provided to the response team on a weekly basis for appropriate action.

## 6 *The City Health Office takes appropriate actions based on recommendations.*

The City Health Officer calls a meeting between the surveillance team and the response team to discuss the results of the weekly analysis and the actions to be taken. The response team is composed of the Sanitary Inspector, Health Education and Promotion Officer, and the coordinators of the following programs: Expanded Programme on Immunization, Control on Diarrheal Diseases, Maternal and Child Health, and Rabies Control.

The CHO also attends the regular meetings of the Association of Barangay Captains to report the CDSS findings, particularly to enlist the support of barangay captains of affected areas in the implementation of the recommended courses of action. The CHO also tries to meet with concerned school authorities to discuss the magnitude of the problem and the role of the school in curbing further spread of the disease.





## Epidemiological Investigation: How It Works in Bago City

The surveillance team conducts an epidemiological investigation when there is an indication of a possible disease outbreak. For each reported case, the team uses a prepared investigation form to interview the patient or a relative who can provide information regarding the patient's disease condition. If necessary, the team also conducts a house-to-house survey to find other unreported cases. In some instances, the midwives conduct the epidemiological investigation, particularly for diseases with which they have a high degree of familiarity. To date, the City Health Office has developed investigation forms for pertussis, viral hepatitis, and typhoid fever.

An epidemiological investigation is conducted to confirm the occurrence of a disease outbreak, to determine the possible etiology and mode of transmission, and to institute control and preventive measures. Patients are eventually advised to visit the

An **outbreak** or **epidemic** is the occurrence of an unusual (greater than expected) number of cases of a disease in a given area or among a specific group of people over a particular period of time. Most outbreaks come to the attention of the health department either through a surveillance system or reports from concerned citizens or the media about a "cluster" of several cases. These reports have to be investigated to verify whether there is truly an outbreak.

A **cluster** is a group of cases in a given area over a particular time regardless of whether the number of cases is more than expected. **Not all clusters of cases are outbreaks.** Some are sporadic and unrelated cases of the same disease, while others may turn out to be unrelated cases of similar diseases. In an outbreak, the cases are related to one another or have a common cause. To determine whether the number of cases is more than expected, one has to compare the current number of cases with the number of cases during the past weeks or months, or during a compatible period over the last few years. Even if the current number of cases exceeds the number reported in the past, this does not necessarily indicate an outbreak. Case reporting may have improved, or there may have been sudden changes in the population size (for example, increased population at resort areas during the summer).

Whether or not a cluster of cases should be investigated depends on several factors. The severity of illness, potential for spread, available resources, and legal and political considerations all influence the decision to conduct an investigation.

**Source:** National Epidemiology Center, Department of Health

City Health Office, both for further laboratory tests to confirm their diagnosis and for proper case management.

The timing of the investigation varies, depending on the urgency of the situation and the geographic location. If, during the weekly data collection, the

midwife reports an unusual number of patients who manifest signs and symptoms of a particular disease, the surveillance team immediately schedules an investigation to determine the extent of the problem. If the barangay is near the health center, the investigation occurs that day. Otherwise, it is scheduled for the following day. The concerned families are notified before the scheduled visit to ensure that the patients are in the area when the team comes to investigate. The midwife and/or the barangay health worker usually accompany the team, to facilitate identification of the subject individuals/families.

Depending on their availability, the Sanitary Inspector and the Health Education and Promotion Officer usually join the surveillance team during the epidemiological investigation. The Sanitary Inspector is an essential member of the team when the disease being investigated is environmentally related, while the Health Education and Promotion Officer provides on-the-spot health education about disease prevention and treatment.



## INVESTIGATION FORM ON VIRAL HEPATITIS

Name : \_\_\_\_\_ Age : \_\_\_\_\_ Gender : \_\_\_\_\_ Religion : \_\_\_\_\_  
 Occupation : \_\_\_\_\_ Civil Status : \_\_\_\_\_  
 Address : \_\_\_\_\_  
 Name of School : \_\_\_\_\_

### A. Onset of symptoms

Date: \_\_\_\_\_

#### ♦ Initial Symptoms :

Date of Onset : \_\_\_\_\_

Was it associated with the following:

### Signs and Symptoms:

- ☐ Fever      ☐ Nausea      ☐ Malaise      ☐ Anorexia      ☐ Abdominal Discomfort
- ☐ Jaundice      ☐ Hepatomegally      ☐ Dark Urine
- ♦ ☐ eyes
- ♦ ☐ skin

### B. First Seen by the Physician

Date : \_\_\_\_\_

Medications Taken : \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

### Laboratory Result (If there is any)

Hospitalized : ☐ Yes ☐ No    If yes, Where : \_\_\_\_\_ How long? \_\_\_\_\_  
 Inclusive dates : \_\_\_\_\_  
 Diagnosis : \_\_\_\_\_

C. Outcome :    Recovered ☐      Not improved ☐      Died ☐

### D. Contacts

- Are there any other persons in the community manifesting similar signs and symptoms? \_\_\_\_\_ Yes \_\_\_\_\_ No
- Was the patient exposed to these persons with similar manifestations? \_\_\_\_\_ Yes \_\_\_\_\_ No
  - If yes, how is the patient related to these persons? \_\_\_\_\_
  - Does the patient live with these persons? \_\_\_\_\_ Yes \_\_\_\_\_ No

### FOOD

- Does the patient eat food from ambulant vendors? \_\_\_\_\_ Yes \_\_\_\_\_ No
- What were the foods eaten by the patient two weeks before the illness? \_\_\_\_\_
  - Source: \_\_\_\_\_
  - \_\_\_\_\_ Vendor
  - \_\_\_\_\_ Prepared by mother/significant others

### WATER

- What is the patient's source of drinking water? \_\_\_\_\_
- Is the patient's drinking water being boiled? \_\_\_\_\_ Yes \_\_\_\_\_ No

### SANITATION

- Does the patient practice proper handwashing:
  - Before and after eating? \_\_\_\_\_ Yes \_\_\_\_\_ No
  - Before and after using the toilet? \_\_\_\_\_ Yes \_\_\_\_\_ No
- Does the household have a toilet for sanitary disposal of feces? \_\_\_\_\_ Yes \_\_\_\_\_ No
- Does the household have a waste and garbage disposal system? \_\_\_\_\_ Yes \_\_\_\_\_ No

### BLOOD-BORNE

- Has the patient undergone blood transfusion? \_\_\_\_\_ Yes \_\_\_\_\_ No
- Is the patient an injecting drug user? \_\_\_\_\_ Yes \_\_\_\_\_ No

## Status of the CDSS in Bago City

Currently in Bago City, monthly disease surveillance reports are produced and disseminated with the data generated by the CDSS. These reports help the City Health Office to address identified health problems and to prevent and contain disease outbreaks.

Since the establishment of the Bago City CDSS in December 2000, epidemiological investigations have been conducted for pertussis and viral hepatitis. In December, four cases of pertussis were found in one barangay; three of the children identified with the disease attend the same school. Also in December 2000, 14 cases of viral hepatitis were recorded, with 8 cases coming from one barangay. In February 2001, 11 more cases were discovered in a nearby barangay. An epidemiological

investigation identified the water supply source and food from an ambulant vendor as the probable causes. The index cases have been confirmed by laboratory testing, and an environmental assessment has been conducted. While not entirely complete, the results of the investigation have been discussed with local political leaders and appropriate interventions launched, including immediate steps necessary to contain the disease outbreaks.

To prevent further occurrences of viral hepatitis in Bago City, the City Health Office has organized health education activities highlighting disease prevention and control. It continuously monitors identified cases and ensures that midwives report and refer identified cases as early as possible. The Sanitary Inspector meets with food handlers to discuss measures to improve food sanitation and promotes household water chlorination in affected areas.

To contain pertussis, the City Health Office has strengthened immunization activities, particularly in affected areas. It has also conducted health education classes in local communities focusing on the importance of immunization and has worked with school authorities to provide similar education during assemblies such as Parent-Teacher Association meetings.

## Conclusion

In implementing its CDSS, Bago City has predictably encountered certain problems that it is working to overcome. For instance, the City Health Office was able to positively confirm only one suspected hepatitis case because of high laboratory costs (Php400 per patient or about US\$9). To process data more efficiently, the City Health Office computers need upgrading. Continuing technical assistance from PMTAT is also required to guide the City Health Office through the CDSS's early stage to ensure its eventual success and long-term sustainability. In this regard, it is important for the City Health Office to enlist the support and cooperation of the regional epidemiologist.

For LGUs that intend to set up a disease surveillance system, it is necessary to involve national and regional epidemiologists during the planning stage to ensure their support for implementation. At the same time, the participation of national and regional epidemiologists in the design and planning process is part of an effort to encourage LGUs to develop systems for enhancing data generation, maintenance, and use at the local level, in line with the efforts to enhance the national surveillance system. This is also to ensure that local-level surveillance systems are developed in the context and in support of the national surveillance system.



## *Sample Investigation Report*

### **Bago City Disease Surveillance Unit: Investigation of Viral Hepatitis Cases in Barangay Bacong**

#### ***Introduction***

In November 2000, the Bago City Health Office provided a five-day training course on establishing a disease surveillance system for all its Medical Officers, Public Health Nurses, Rural Health Midwives, and the city's surveillance team. On December 1, 2000, the office operationalized its disease surveillance unit.

Viral hepatitis was the most prevalent of the 12 diseases being monitored, with cases detected in 18 of the 24 barangays of the city. Reported cases were rising steadily, with the highest number coming from Barangay Bacong. As a result, on February 8, 2000, the surveillance team conducted an investigation into viral hepatitis in the area of Barangay Bacong.

#### ***Methodology***

A line list of cases was obtained from the surveillance data. In addition, a house-to-house survey was conducted to identify viral hepatitis cases not detected by routine surveillance. A viral hepatitis case was defined as an individual who developed signs and symptoms of viral liver disease such as fever, malaise, anorexia, nausea, and abdominal pain, followed by jaundice and hepatomegaly. A hepatitis A case was an individual with any sign or symptom of viral hepatitis and with serological evidence of hepatitis A virus (HAV) infection (that is, who tested positive for antibodies against HAV).

The patients were interviewed using a standard questionnaire, which included inquiries about the present illness, the source of the household water supply, water usage, toilet facilities, garbage disposal, practices on buying street foods, and personal hygiene. In one case, a blood sample was taken from the patient for laboratory confirmation of viral hepatitis.

Since hepatitis A can be spread through food, several ambulant food vendors were also interviewed, using a questionnaire similar to the one used for patients, but with additional inquiries on food preparation and food handling practices. Blood samples were taken from two vendors for hepatitis testing.

Finally, the surveillance unit conducted an environmental survey of the affected area. This included taking water samples from the shared water source of several water distribution lines for analysis.

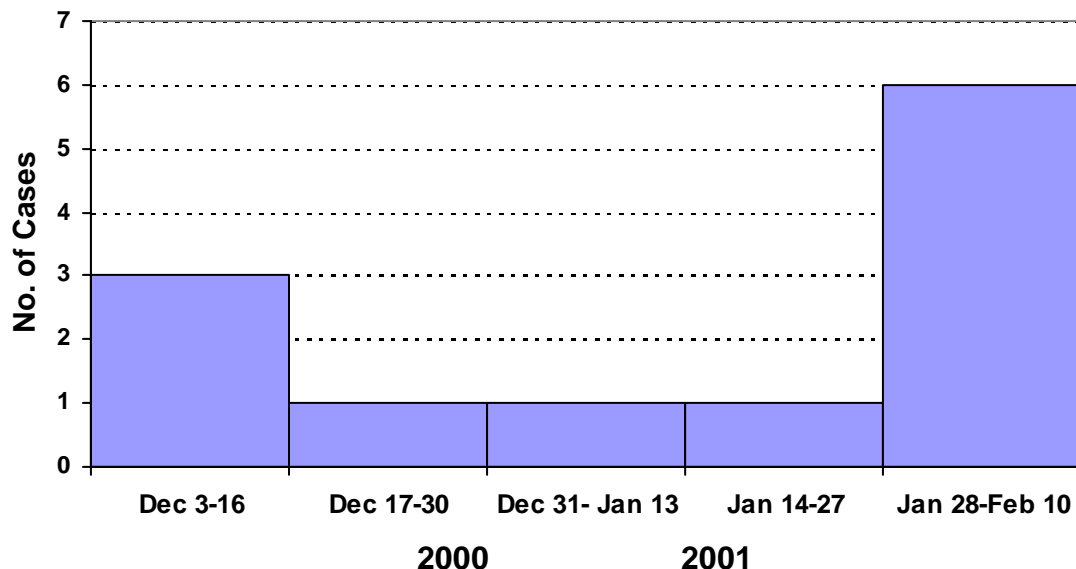
#### ***Results***

The surveillance unit confirmed 12 cases of viral hepatitis. In the first case, the onset of illness was December 3, 2000.

The ages of the cases from Barangay Bacong ranged from 3 to 40 years with a median age of 5.5 years. Fifty-eight percent (58%) were females. Of the 12 cases, 9 came from a cluster of 12 families in Purok Malipayon (a neighborhood in the barangay). One patient tested positive for HAV antibodies. There were no deaths. The two ambulant vendors tested negative for hepatitis.



**Figure 1: Onset of Illness of Hepatitis A Cases (N=12)**  
**Barangay Bacong, Bago City**  
**December 3, 2000, to February 10, 2001**



The investigation into hepatitis A cases found that environmental sanitation in Barangay Bacong is poor. None of the households that reported cases have sanitary toilets, and many of the people infected with hepatitis A said that they did not regularly wash their hands after defecating. Human waste is disposed of in a nearby creek and a local sugar cane plantation. Garbage is primarily disposed of through open dumping and burning.



The main water source of Purok Malipayon is a protected spring; water is distributed through steel pipes to several communal water outlets. Drinking water is neither chlorinated nor boiled. The cluster of 12 households from which most of the cases came was located about 50 meters from the nearest communal water outlet. Water testing of all sampling sites was positive for coliform bacteria.

*Communal water outlet*

### ***Discussion***

The epidemic curve of the outbreak of hepatitis A in Barangay Bacong shows that the outbreak is on the upswing and the number of infected individuals will continue to increase. A number of factors contribute to this trend. Poor environmental conditions favor the spread of the disease in the area. While there is a protected spring, it is located at a significant distance from most households. The scarcity of readily available, sanitary water tends to decrease the quantity of water collected

and used by families, further contributing to poor personal hygiene. This is further aggravated by the fact that houses do not have sanitary toilets. Further, the improper disposal of contaminated human waste contributes to the spread of the disease, particularly to children playing in the disposal areas.

Unless environmental sanitation is improved, personal hygiene changed, and water made more accessible to the community, the residents will continue to be at risk of acquiring other diseases transmitted by the fecal-oral route, such as cholera and typhoid fever.

### ***Actions Taken***

#### **Medical Officers**

1. Active tracking of and treatment for cases.

#### **Public Health Midwives**

1. Immediate referral and reporting of identified cases.
2. Community health education about the disease and its prevention.
3. Continuous monitoring of identified cases.

#### **Sanitary Inspectors**

1. Water sampling and analysis.
2. Chlorination of main water supply.

#### **Health Education and Promotion Officer**

1. Community health education on hepatitis prevention and control through a community assembly.
2. Reproduction and distribution of IEC materials about viral hepatitis in the community and schools.

#### **Barangay Bacong Officials**

1. Sanitary toilets provided to affected families.

#### **City Engineer's Office**

1. Inspection of the condition of the water pipes and installation of pipes in the area designated for emergency water pipes to provide water to the 12 affected households.

### ***Recommendations***

#### **To All Medical Officers IV and PHMs**

1. Continue disease surveillance by promptly reporting diagnosed cases to the CDSS Team.

#### **Sanitary Inspectors**

1. Conduct a training seminar for all food handlers in Bago City.
2. Intensify campaign on the construction of sanitary toilet facilities.
3. Conduct regular water sampling and analysis.
4. Advise chlorination of water supply.

**Disease Surveillance Data Analysis**  
**December 1, 2000, to May 5, 2001**

**CDSS Findings**

The different disease surveillance-reporting units (Barangay Health Stations) of Bago City reported 101 cases of viral hepatitis from December 1, 2000, to April 30, 2001. The ages of cases ranged from 1 year to 65 years with a median of 9 years. Fifty-three percent were males (54/101). Most of the cases came from Barangays Ma-ao and Bacong. There were no deaths.

**Table 1: Viral Hepatitis Cases by Barangay by Month (N=101)**  
**December 1, 2000, to April 30, 2001**

Barangay	Dec 2000	Jan 2001	Feb 2001	Mar 2001	April 2001	Total
1 Ma-ao	8	2	4	7	9	30
2 Bacong	3	2	6	8	1	20
3 Binubuhan	0	2	0	4	2	8
4 Mailum	1	2	0	3	1	7
5 Dulao	0	3	1	0	0	4
6 Sampinit	2	0	2	0	0	4
7 Taloc	0	0	0	4	3	7
8 Balingasag	1	1	1	0	0	3
9 Lag-asan	0	2	1	0	0	3
10 Abuanan	0	2	0	0	0	2
11 Poblacion	0	0	0	2	1	3
12 Atipulan	0	1	0	0	0	1
13 Busay	0	0	0	1	0	1
14 Calumangan	0	0	1	0	0	1
15 Caridad	0	1	0	0	1	2
16 Napoles	0	1	0	0	1	2
17 Pacol	1	0	0	0	0	1
18 Malingin	0	0	0	1	0	1
19 Tabunan	0	0	1	0	0	1
Total	16	19	17	30	19	101

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